

BENCHMARK MA.6.S.6.1

Reporting Category	Data Analysis
Standard	Supporting Idea Data Analysis
Benchmark	MA.6.S.6.1 Determine the measures of central tendency (mean, median, and mode) and variability (range) for a given set of data.
Item Type	At Grade 6, this benchmark will be assessed using MC and GR items.
Benchmark Clarification	Students will determine the mean, median, mode, or range for a given set of data.
Content Limits	<p>Items may include data presented in a table, line plot, bar graph, double bar graph, or line graph.</p> <p>The number of data points may not exceed ten when the median or mode is being determined.</p> <p>The number of data points may not exceed six when the mean is being calculated.</p> <p>Items may include the use of frequency tables for numerical or categorical data.</p> <p>Items may include the use of whole numbers; fractions with denominators of 2, 4, or 10; or decimal values, which may include 0.25, 0.75, or tenths.</p>
Stimulus Attributes	Items should be set in a real-world context.
Prior Knowledge	Items may require the student to apply mathematical knowledge described in the Standards from lower grades. This benchmark requires prerequisite knowledge from MA.3.S.7.1 and MA.5.S.7.1.

SUPPORTING IDEAS

Data Analysis

BENCHMARK CODE	BENCHMARK
MA.6.S.6.1	Determine the measures of central tendency (mean, median, and mode) and variability (range) for a given set of data.
MA.6.S.6.2	Select and analyze the measures of central tendency or variability to represent, describe, analyze and/or summarize a data set for the purposes of answering questions appropriately.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>MA.6.S.6.In.a Use a bar graph to group and display data in categories.</p> <p>MA.6.S.6.In.b Identify the categories with the largest and smallest numbers represented on a bar graph.</p>	<p>MA.6.S.6.Su.a Sort and count data using three designated (labeled) categories and display in a pictograph.</p> <p>MA.6.S.6.Su.b Identify the category with the largest number in a pictograph representing real-world situations.</p>	<p>MA.6.S.6.Pa.a Identify familiar objects, pictures, or symbols used to represent data in a pictograph or chart.</p> <p>MA.6.S.6.Pa.b Identify the largest set of objects, pictures, or symbols representing data up to 3.</p>

FLORIDA GRADE 6 CONTENT MODULE MA.6.S.6.1

MA.6.S.6.1: Determine the measures of central tendency (mean, median, and mode) and variability (range) for a given set of data.

Table of Contents:

A. Vertical Alignment of prerequisite and subsequent benchmarks.....	4
B. Content description and glossary of terms used.....	5
C. Description of student developmental level	7
Literacy strategies	
Numeracy strategies	
Brain-compatible learning strategies	
E. Rigor/relevance Chart.....	8
F. Gold Seal Lesson: PRESCRIPTION DRUGS	9
G. Gold Seal Lesson: BOWLING LEAGUE HANDICAPS	13
H. Gold Seal Lesson: WHAT MAKES A GOOD BASKETBALL PLAYER?	18
I. Differentiation	21
Strategies for SWD.....	
Strategies for ELL.....	
Strategies for enrichment.....	
J. Sample questions from FCAT	22
K. Links to web-based instructional materials.....	26

MA.6.S.6.1 – VERTICAL ALIGNMENT

4th Grade :

MA.4.A.2.4 Compare and order decimals, and estimate fraction and decimal amounts in real-world problems.

MA.4.A.4.2 Describe mathematics relationships using expressions, equations and visual representations.

5th Grade :

MA.5.A.1.4 Divide multi-digit whole numbers fluently, including solving real-world problems, demonstrating understanding of the standard algorithm and checking the reasonableness of results.

MA.5.A.6.2 Use the order of operations to simplify expressions which include exponents and parentheses.

MA.6.S.6.1:	Determine the measures of central tendency (mean, median, and mode) and variability (range) for a given set of data.
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7th Grade :

MA.7.A.3.3 Formulate and use different strategies to solve one-step and two-step linear equations, including equation with rational coefficients.

MA.7.S.6.1 Evaluate the reasonableness of a sample to determine the appropriateness of generalizations made about the population.

CONTENT DESCRIPTION : MA.6.S.6.1

Students should be able to find measures of central tendency from sets of data displayed in tables, line plots, bar graphs, double bar graphs, or line graphs.

Sixth graders must learn the different algorithms for computing the mean, median, mode and range of a data set.

MEAN: The mean is also known as “the arithmetic average”.

MEDIAN: The median is the “middle” number when a set of data is arranged in numerical order. When the data set has an even number of numbers, the median is found by averaging the two middle numbers. In a set of data, half of the numbers are greater than the median and half are less than the median.

MODE: The mode is the most frequently appearing number in the data set. There can be more than one mode in some sets if there are two or more most frequently appearing numbers.

RANGE: The range is used to describe the variability of a set of data. The range is a single number that is computed by subtracting the smallest number in the set from the largest number in the set.

GLOSSARY OF RELATED MATHEMATICAL LANGUAGE

data Information collected and used to analyze a particular concept or situation.

estimate An answer that is an approximation.

mean A measure of central tendency; the quotient obtained when the sum of the numbers in a set is divided by the number of addends.

measure of central tendency A single number that represents a typical value for a set of numbers; the three most common measures of central tendency are the mean, median, and mode.

median The middle number of a set of numbers arranged in increasing or decreasing order; if there is no middle number, the median is the average of the two middle numbers.

Examples: The median of the numbers 1, 1, 2, 4, 5, 6, and 7 is 4.
The median of the numbers 1, 1, 2, 4, 5, 6, 7, and 7 is 4.5.

mode The number or members of a data set that occurs most frequently in the set.

range of a data set The difference between the greatest and the least values in a set of numbers.

Example: Given the data: 2, 7, 3, 14, -1, 6, 34, -3

The range is $34 - (-3) = 37$

table of values An organized list of values from a function/relation.

tally mark A mark used to keep track of data being counted.

DESCRIPTION OF STUDENT DEVELOPMENTAL LEVEL

LITERACY STRATEGIES

In everyday speech, the term, “range” may convey a meaning that differs from the strict mathematical definition. For instance, the daily temperature may *range* from 50° to 75° or employees’ salaries may *range* from \$30,000 to \$100,000. Emphasize to students that the mathematical definition of range is a single number found by subtracting the smallest number from the largest number in the data set. Provide students with experience in recognizing different phrases that appear in questions that indicate that the statistical range should be computed.

NUMERACY STRATEGIES

Numeracy, or quantitative literacy, is the ability to reason with numbers and other mathematical concepts. Numeracy includes a comfort with using logic and reasoning and the ability to apply mathematical knowledge to the solution of real-world problems and everyday tasks.

The ability to differentiate between these three measures of central tendency is central to understanding business, politics, science, economics . . . and the list goes on! Provide problem-solving situations where students must decide which measure of central tendency is the most useful for supporting a position. Help students to make an accurate written argument for their decision.

BRAIN-COMPATIBLE LEARNING STRATEGIES

In general, for positive transfer of new learning into long-term memory, the brain looks for similarities to prior knowledge. The new learning is stored with other concepts that have comparable characteristics or associations. On the other hand, to retrieve that learning, the brain looks for characteristics that make it different from other concepts.

Mean, median, and mode have many similarities. They all describe sets of data, they are all measures of central tendency, and they all begin with the letter, M! These similarities can make it difficult for the brain to perceive the difference between the terms when the time comes to retrieve the learning.

In his book, How the Brain Learns, David Sousa suggests that similar concepts not be taught at the same time. Teach one concept and provide enough practice so that students understand it completely. A few weeks later, teach the second, related concept.

RIGOR/RELEVANCE CHART

QUADRANT C
(assimilation)

QUADRANT D
(adaptation)

	<ol style="list-style-type: none">1. Make a judgment as to whether or not using a handicapping method is fair or effective.2. Study drug labels to determine the range of dosages for different ages or weights.3. Use data to form an opinion about good basketball players.
<ol style="list-style-type: none">1. Given a set of data, calculate the mean, median, mode and range.	<ol style="list-style-type: none">1. Calculate the range of drug dosages.2. Calculate bowling average.3. Find data to support an hypothesis.

QUADRANT A
(acquisition)

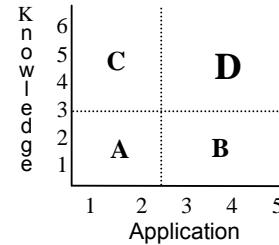
QUADRANT B
(application)



PRESCRIPTION DRUGS

Subject(s)
Mathematics

**Rigor/Relevance
Framework**



Grade Level
6

Instructional Focus

Number Operation and Concepts

Students use number, number sense, and number relationships in a problem-solving situation. Students communicate the reasoning used in solving these problems.

Statistics and Probability

Students use statistics and probability to analyze given situations and the results of experiments. Students communicate the reasoning used in arriving at a conclusion.

Problem-Solving and Mathematical Reasoning

Students apply a variety of problem-solving strategies to investigate and solve problems from across the curriculum as well as from practical applications.

Student Learning

Students will calculate the range of a set of data from a real-world situation.

Students will describe the meaning of the range as describing the amount of variability of the set of data.

Performance Task

6th grade students have almost certainly had to take some prescription drug for allergies or ear infections, etc., so they probably have some recollection about the importance of the number of pills that were taken or the number of tablespoons that were swallowed. This lesson asks students to consider the meaning of “range” in that context.

First, students can work through the problems on the accompanying worksheet. This will get them familiar with calculating the range. For more experience with the range, students are asked to work with an adult in their family to find either prescription or over-the-counter drugs at home (or in a store or print ad) and to identify the range from the instructions listed on the package.

Scoring Guide

Teachers should collect the worksheet and read the student description of the range from their home assignment. This should be used as a formative assessment. It can provide information that the teacher can use to alter instruction, if necessary to impart a better understanding of this topic. Written teacher comments can be used by the student to adjust his or her cognitive knowledge of “range”.

Attachments/ Resources

Worksheet: Prescription Drugs

PRESCRIPTION DRUGS

People who work in the medical field such as physicians, pharmacists and nurses are required to know a lot about prescription drugs. This includes knowing the **range** of ages, weights, and dosages that are indicated for taking the drug safely.

The range is often described as the set of values that a number can have. A range is specified by its maximum and minimum value. Any number that is between these two values is said to be within the range. When you learn about functions, this definition of range will be used.

The statistical range that you are learning about is only one number! This range measures the variability of a set of data. If all the students in a 6th grade class had body weights between 60 pounds and 135 pounds, the range would be found by subtracting: **135 – 60 = 75. The range is 75.** This means that there is a variability of 75 pounds between the lightest and heaviest 6th graders in the class.

DAYPRO is used to reduce pain, swelling, and joint stiffness from arthritis. The chemical name is oxaprozin and it is described as a non-steroidal anti-inflammatory drug, chemically designated as 4,5-diphenyl-2-oxazole-propionic acid.	Dose (mg)	Body Weight Range (kg)
	600	22-31
	900	32-54
	1200	≥ 55
¹ Model-based nomogram derived from unbound oxaprozin steady-state drug plasma concentrations of JRA patients weighing 22.1 - 42.7 kg or ≥ 45.0 kg administered oxaprozin 600 mg or 1200 mg QD for 14 days, respectively.		

1. 600 mg of DAYPRO should be given to anybody whose body weight is 22-31 kg. What is the range of body weights who would be prescribed this dosage – in other words – what is the variability of these body weights?

(Show work.)

2. What is the range (or variability) in the body weights of people who are prescribed a dosage of 900 mg of DAYPRO?

3. Look at the three possible dosage amounts listed in the table. What is the range of possible dosages?

Penicillin G Potassium is used in the treatment of many serious infections.	Haverhill fever; Rat-bite fever	12 to 20 million units/day for 3-4 weeks(*)

4. What is the range of units per day for Penicillin G Potassium?

5. What is the range of time in which this drug should be taken?

Benadryl® Allergy is used to relieve symptoms due to hay fever or other upper respiratory allergies. Diphenhydramine HCl	adults and children 12 years of age and over	25 mg to 50 mg (1 to 2 capsules).
	children 6 to under 12 years of age	12.5 mg ** to 25 mg (1 capsule).
	children under 6 years of age	consult a doctor

6. What is the range (what is the variability) of the ages of children who are prescribed a dosage of 18 mg of Benadryl Allergy? _____
7. What is the range (what is the variability) of the number of mg of Benadryl Allergy that a doctor should prescribe to adults? _____
8. Suppose that a child comes in with symptoms of hay fever and the doctor decides to prescribe Benadryl Allergy. How do you think the doctor makes the decision as to what dosage to prescribe?

Norgesic is a drug used for symptomatic relief of mild to moderate pain of acute musculoskeletal disorders.	Norgesic: Adults 1 to 2 tablets 3 to 4 times daily.
	Norgesic Forte: Adults ½ to 1 tablet 3 to 4 times daily.

9. An adult is taking Norgesic tablets and is following the instructions listed in the table:
- a) What is the fewest tablets that the adult takes in one day? _____
- b) What is the most tablets that the adult takes in one day? _____
- c) What is the range (variability) in the number of tablets that the adult could take each day? _____
10. If an adult follows the instructions for taking Norgesic Forte, what is the range of the number of tablets that the adult could take each day? Show work:

ASSIGNMENT:

CAUTION!!!!!!

Medicine should never be taken or even touched by children without adult supervision!!

This is true for both prescription drugs and over-the-counter drugs.

That means for this assignment, you will have to ask an adult member of your family for help!

Most families have some sort of medicine at home. The medicine is often an over-the-counter drug like aspirin or cough syrup or even vitamins. By law, all medicines must include a description of safe dosages to take.

- With an adult family member, find a medicine in your home or in a store or in a magazine or Internet advertisement. Look for a medicine that uses a range of ages or weights or dosage amounts in the directions. Copy that information below:

- Choose one or more sets of information and write a description of the range in the space below. Be sure to include labeled work that shows how you determined the range. You must write a few sentences to explain what the range really means for this situation.

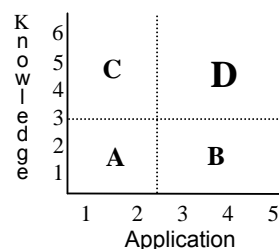


BOWLING LEAGUE HANDICAPS

Subject(s)
Mathematics

Grade Level
6

**Rigor/Relevance
Framework**



**Instructional
Focus**

Number Operation and Concepts

Students use number, number sense, and number relationships in a problem-solving situation. Students communicate the reasoning used in solving these problems.

Algebraic Concepts and Relationships

Students use algebraic methods to investigate, model, and interpret patterns and functions involving numbers, shapes, data, and graphs in a problem-solving situation. Students evaluate and communicate the reasoning used in solving these problems.

Statistics and Probability

Students use statistics and probability to analyze given situations and the results of experiments. Students communicate the reasoning used in arriving at a conclusion.

Problem-Solving and Mathematical Reasoning

Students apply a variety of problem-solving strategies to investigate and solve problems from across the curriculum as well as from practical applications.

**Student
Learning**

Students will learn how data is used in a life-time sport - bowling - to equalize competition between participants.

Students use appropriate tools and technologies to record data and create graphs to use for analysis of a real-world situation.

**Performance
Task**

This is a lesson that could be taught in collaboration with the Physical Education department at your school if bowling is part of the PE curriculum. It might also be taught in conjunction with an after-school bowling party used as a reward or as a fund-raiser. Alternatively, a mini-bowling lane might be set up in your classroom or in an adjacent hallway. Also, on-line virtual bowling games could be used to generate the data.

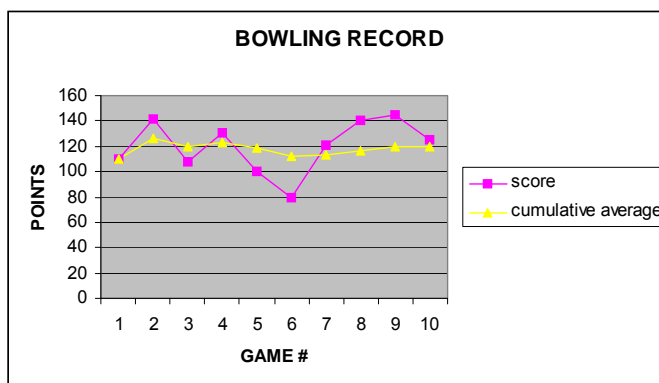
Students will collect data related to their individual bowling scores and will analyze their performance over a period of several games.

Begin the unit by ensuring that all students understand the mathematical procedures used to calculate a bowler's average, a bowler's handicap and a team handicap. The accompanying worksheet walks students through that process and can be completed individually, in groups or as a whole-class activity. The teacher should consider providing calculators for student use. Level 6 of the Learning Taxonomy will be achieved when students are asked to make a judgment about the efficacy and fairness of using a handicapping

system in a bowling league.

Assign students to four-member teams. Each student will record their own individual scores for a given number of games. The data can be entered in spreadsheet form - either on paper or electronically.. The spreadsheet should have three columns: game #, points per game, cumulative average. Students might be required to use this spreadsheet to make a double line graph to illustrate their performance in each game and the cumulative average to see what effect each game has on the average, as shown below. The cumulative average is calculated by adding the scores from all games to that point and dividing by the number of games. For example, the cumulative average at game #4 = $(110 + 142 + 108 + 131)/4$.

Game #	score	cumulative average
1	110	110.0
2	142	126.0
3	108	120.0
4	131	122.8
5	100	118.2
6	80	111.8
7	121	113.1
8	140	116.5
9	145	119.7
10	125	120.2



Handicapping is commonly used by bowling leagues to equalize teams. The Internet is a great source of information about handicapping. One site with good information is : <http://www.bowlingfans.com/faq/hc.shtml> . The attached worksheet provides guidance as well, particularly with helping students understand the mathematics that is embedded in the handicapping formula. Not all leagues use handicapping. Students should engage in a discussion about the benefits and deficits of designing a league using this method and should form an opinion about when handicaps are appropriate and when they are not.

Scoring Guide

Scoring Guide Attached

**Attachments/
Resources**Worksheet: "Bowling Handicaps"
<http://www.bowlingfans.com/faq/hc.shtml>

SCORING GUIDE:

Rate the Criteria				
3 = Excellent, 2 = Satisfactory, 1 = Unsatisfactory, 0 = Does not attempt				
Student Performance Criteria				
Circle Rating				
1. Student completes n games of bowling. Evidence of this is found in teacher records.	3	2	1	0
2. Student records bowling scores in a spreadsheet Evidence of this is found by checking the spreadsheet.	3	2	1	0
3. Student figures individual bowling average. Evidence that this is done correctly is confirmed by checking student work.	3	2	1	0
4. Student calculates individual handicap. Evidence of student learning is found on the worksheet and by checking student work.	3	2	1	0
5. Student generated spreadsheet and graphs. Evidence of student learning is found by collecting and checking the spreadsheets and graphs.	3	2	1	0
6. Student draws conclusions from data. The evidence of student learning is found in written statements submitted with graphs and from teacher observations during class discussions.	3	2	1	0

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CALCULATING BOWLING HANDICAPS



Handicapping is a method of placing bowlers and teams with varying degrees of skill on as equitable a basis as possible for their competition against each other. Individual leagues decide on a number to use for the base; typically something like 200 or 210. Then the league decides on a percentage to use; usually a number between 75% - 100%. Each individual bowler has to figure out his or her average by dividing total pins by total games. A handicap is figured out for each bowler and also for each team.

1. Rhonda has bowled 10 games and has a total of 1,760 pins. What is her average?

2. Pedro has bowled 12 games and has a total of 1,980 pins. What is his average?

3. Stacy only bowled in a few games and the number of pins in each game is listed below:

120, 108, 137, 145, 129

What is her average?

To figure out a player's handicap, follow these steps:

- Subtract the player's average from the base number determined by the league.
- Using the percentage determined by the league, find that percent of the difference.

Rhonda's average was 176. The league bases their handicap on 80% of 210. Follow the steps to figure out Rhonda's handicap:

- Base - average: $210 - 176 = 34$
- 80% of difference: $0.80 \times 34 = 27.2$
- Drop the fraction (don't round!)
- Rhonda's handicap is 27, which means that 27 points will be added to her pins for each game.

5. Etienne's average is 170. The league bases its handicap on 80% of 210. What is Etienne's handicap?

6. Gino's average is 185. The league bases its handicap on 90% of 200. What is Gino's handicap?

7. Annette's average is 156. The league bases its handicap on 100% of 200. What is Annette's handicap?

8. Val's average is 167. His league bases its handicap on 95% of 200. What is Val's handicap?

9. Sam's average is 138. Her league bases its handicap on 100% of 210. What is Sam's handicap?

The following teams will be competing against each other. The league determines the handicaps for each player by using 100% of 200. Those individual handicaps are added together to come up with a team handicap.

RED TEAM	average	handicap
Joe	134	
Hannah	143	
Sully	152	
Pilar	129	
TEAM HANDICAP:		

GREEN TEAM	average	handicap
Kaylin	140	
Ryan	121	
Jose	137	
Amelie	152	
TEAM HANDICAP:		

BLUE TEAM	average	handicap
Paul	160	
Lesley	119	
Hank	125	
Joelle	146	
TEAM HANDICAP:		

PINK TEAM	average	handicap
Laura	112	
Erin	124	
Brian	136	
Marco	167	
TEAM HANDICAP:		

Write a paragraph that explains your understanding of using handicapping in bowling leagues. By referring to the data above, express your personal opinion about the fairness of using this handicapping process.

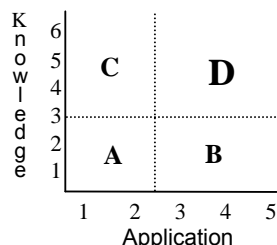
**GOLD
SEAL
LESSON**



WHAT MAKES A GOOD BASKETBALL PLAYER?

Subject(s)
Mathematics

**Rigor/Relevance
Framework**



Grade Level
6

**Instructional
Focus**

Number Operation and Concepts

Students use number, number sense, and number relationships in a problem-solving situation. Students communicate the reasoning used in solving these problems.

Statistics and Probability

Students use statistics and probability to analyze given situations and the results of experiments. Students communicate the reasoning used in arriving at a conclusion.

Problem-Solving and Mathematical Reasoning

Students apply a variety of problem-solving strategies to investigate and solve problems from across the curriculum as well as from practical applications.

**Student
Learning**

The student will write a hypothesis and evaluate it through the use of statistics.

The student will compute the mode of a data set.

The student will compute the median of a data set.

**Performance
Task**

The class will be asked to consider the question, "What Makes a Good Basketball Player?" Students will quickly come up with a variety of conclusions: a good scorer, a good defender, a good foul shooter, good at blocking shots, etc. Members of the class can be divided into groups based on which characteristic they think is most important to consider.

Each group should be given a few minutes to discuss why their characteristic is the most important one to consider when judging who is a good basketball player. Each group should then present their reasoning to the class.

How to decide which group is right? The teacher will challenge each group to write their opinion in hypothesis form and to then try to prove that their hypothesis is correct – or not. Groups are charged with collecting data and using the mode and median to defend their position.

The class can decide if data is to be collected from the middle school or high school teams in their school district, county, league or state. Alternatively,

data could be collected from local college teams or even the NBA!

Each group will find the median and mode of the data. They can compare these numbers with the records of individual players who are considered to be “good” basketball players to see if their performance in each game or in a season was really as good as it seemed. Groups will write a one- or two-page paper to explain their findings.

Groups will share their findings with the rest of the groups in the class.

Of course, this lesson could be changed to a different sport or activity as long as data is readily available.

Scoring Guide

Scoring Guide Attached

Scoring Guide:

Rate student learning:	
4 Points: The student demonstrates a thorough understanding of new knowledge and skills.	
3 Points: The student demonstrates a good understanding of new knowledge and skills.	
2 Points: The student demonstrates a partial understanding of new knowledge and skills.	
1 Point: The student does not demonstrate acceptable understanding of new knowledge and/or skills.	
Characteristic	Circle Rating
#1 Accurately computes the mode of a data set.	4 3 2 1
#2 Accurately computes the median of a data set.	4 3 2 1
#3 Writes a hypothesis.	4 3 2 1
Notes about providing additional instruction for ratings of 1 or 2 points.	

DIFFERENTIATION: MA.6.S.6.1

Students with disabilities

Model problems for SWD students and allow them to participate in the modeling. Provide oral strategies to help them remember what each term means:

MODE – “MOST” frequent (both begin with the same sound)

MEDIAN – “MIDDLE” number in a set

www.learningupgrade.com has a great little animated cartoon set to music that students can listen to over and over again. The name of the animation is “Mean, Median and Mode.” You can listen to this song on youtube.

English Language Learners

Mean, median, mode – they all start with “m”!! ELL students need to make a special effort to differentiate between these words. Entering these terms into their journal or self-made dictionary, along with a few sample problems for each term, will give students a reference to use during independent practice.

ELL students should write out the quite different definitions of “mean” and “range”, including sentences where their mathematical use is in context

Extended Activities for Enrichment

Challenge students to create data sets with a given mean, median and mode.

Ask students what happens to the mean, median and mode of a data set when an extra number is included.

Look through a review book for the SAT. There are a variety of multiple choice questions that provoke deeper reasoning about data sets. Here is one example of the type of questions that can be found:

Data was collected about student allowances and all numbers were rounded to the nearest whole number. The median allowance was \$6. What must be true?

- a) The greatest allowance is at least \$1 more than the smallest allowance.
- b) If there is an allowance of \$5 then there is an allowance of \$7.
- c) The mode of the allowances is \$6.

SAMPLE QUESTIONS FROM THE FCAT: MA.6.S.6.1

1. FCAT GRADE 6 2007 #. 7

The table shows the distance, in centimeters, that a balloon rocket traveled along string during 5 trials in a science experiment.

BALLOON ROCKET TRAVEL

Trial	Distance (in centimeters)
1	339
2	339
3	345
4	347
5	330

What is the **mean** distance, in centimeters, the balloon rocket traveled?

- F. 339
- G. 340
- H. 345
- I. 347

2. FCAT GRADE 6 2007 #39

The table shows the weights of various fish caught in the waters surrounding the Florida Keys.

FISH IN THE FLORIDA KEYS

Fish	Weight (in pounds)
Blue marlin	1500
Dolphin	28
Mutton snapper	13
Permit	24
Red grouper	14
Shortfin mako	225
Tarpon	45

What is the **median** weight, in pounds, of the fish listed on this table?

3. FCAT 2007 GRADE 5 #5

Mr. Henderson made the table below to show the number of pets owned by 7 students in his class.

PETS OWNED

Student	Number of Pets
Jared	2
Karyn	4
LaTonya	2
Monica	0
Russ	1
Terrell	2
Vicky	?

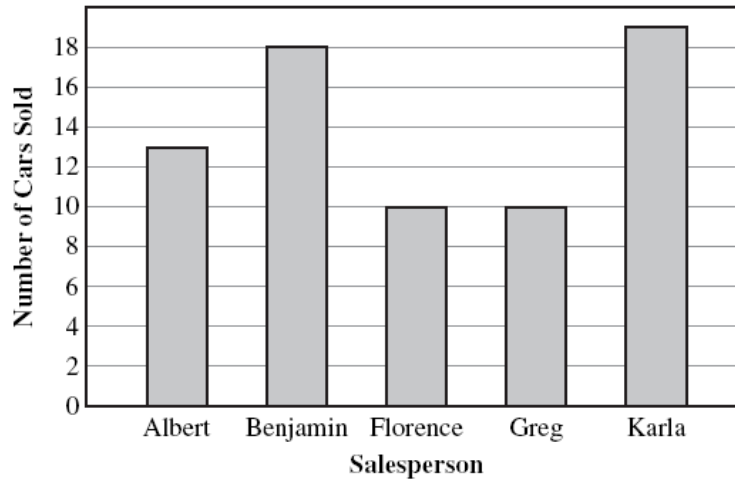
What is the number of pets that Vicky owns, if the **mean** number of pets is 2?

GR

The bar graph below shows the number of cars sold by each of 5 car salespeople during the same month.



CARS SOLD IN ONE MONTH



What is the mean number of cars sold during this month for these 5 salespeople?

1	4				
	0	0	0	0	0
	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4		4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

Sample Response

14

Item Context

Social Studies/Consumerism

Sample Item 21 **MC**

The table below shows information about the 10 most-collected special edition stamps in the United States as of 1998.

MOST-COLLECTED SPECIAL EDITION STAMPS

Name of Stamp	Number Collected (in millions)
Bugs Bunny 1997	45.3
Centennial Olympic Games 1996	38.1
Civil War 1995	46.6
Marilyn Monroe 1995	46.3
Legends of the West 1994	46.5
Elvis 1993	124.0
Rock and Roll 1993	75.8
Summer Olympics 1992	39.6
Wildflowers 1992	76.2
The World of Dinosaurs 1997	38.5

For the stamps listed in the table, what is the median number collected, in millions?

- ★ **A.** 46.4
- B.** 57.69
- C.** 85.90
- D.** 576.9

Item Context The Arts

LINKS TO WEB-BASED INSTRUCTIONAL RESOURCES: MA.6.S.6.1

1. <http://illuminations.nctm.org/LessonDetail.aspx?id=L204> This lesson uses the novel, The Phantom Tollbooth, to link literature with mathematics with a direct emphasis on measures of central tendency.
2. <http://illuminations.nctm.org/LessonDetail.aspx?id=L297> Students analyze cafeteria refuse to learn the meaning of the measures of central tendency.
3. <http://illuminations.nctm.org/LessonDetail.aspx?ID=L522> An activity-based lesson to physically illustrate the meaning of the measures of central tendency.
4. <http://illuminations.nctm.org/LessonDetail.aspx?id=L188> Students record actual measurements to generate data that is used to calculate the measures of central tendency.
5. http://sunearth.gsfc.nasa.gov/sunearthday/2004/ed_act_mean.htm Data about the planets, supplied by NASA, is used to calculate measures of central tendency.
6. <http://video.google.com/videoplay?docid=-5714653075585905287> This video might be used to show how a stock analyst uses the range to look at stock market prices.
7. http://www.youtube.com/watch?v=uydzT_WiRz4&eurl=http://video.google.com/videosearch?q=mean+median+mode+&hl=en&sitesearch= The catchy song on this short video explains how to calculate mean, median and mode.